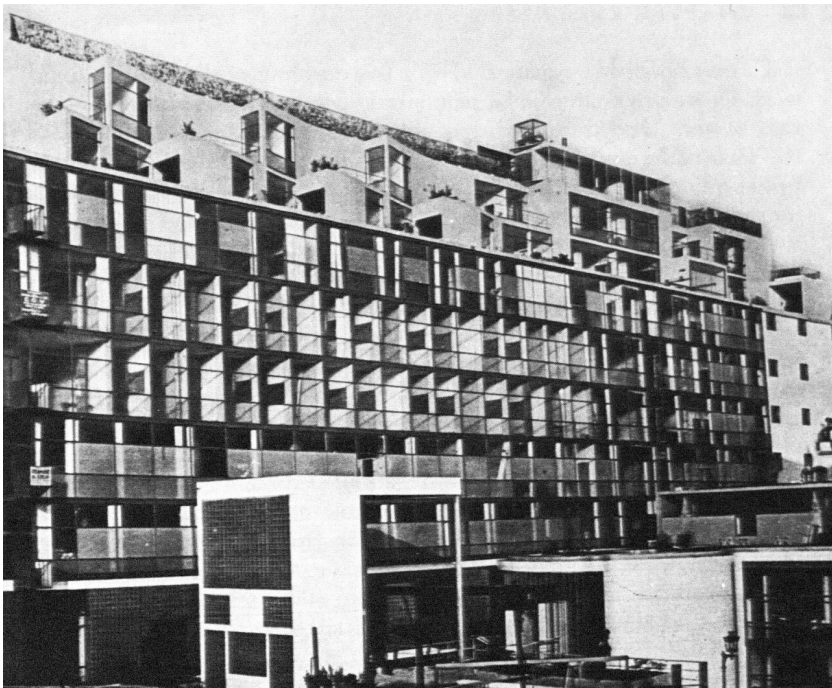


Climate KIC Summer School 13/7/2010
Prof. Claus Steffan, TU Berlin

Case Study

*Energy-efficient Retrofitting
of The City of Refuge, La Cité de Refuge, Salvation Army in Paris
Architect: Le Corbusier with Pierre Jeanneret, 1929 to 1933*

In 1929 Le Corbusier received the commission to design a dormitory with a creche for the salvation army in the Paris 13th arrondissement. For the first time he used a 1000 m² large glass curtain-wall-facade. This facade was oriented to the south and had almost no openings. The ventilation was driven by a novel mechanical ventilation system.



(2)

After world war II he was forced by the client to design a new different facade.



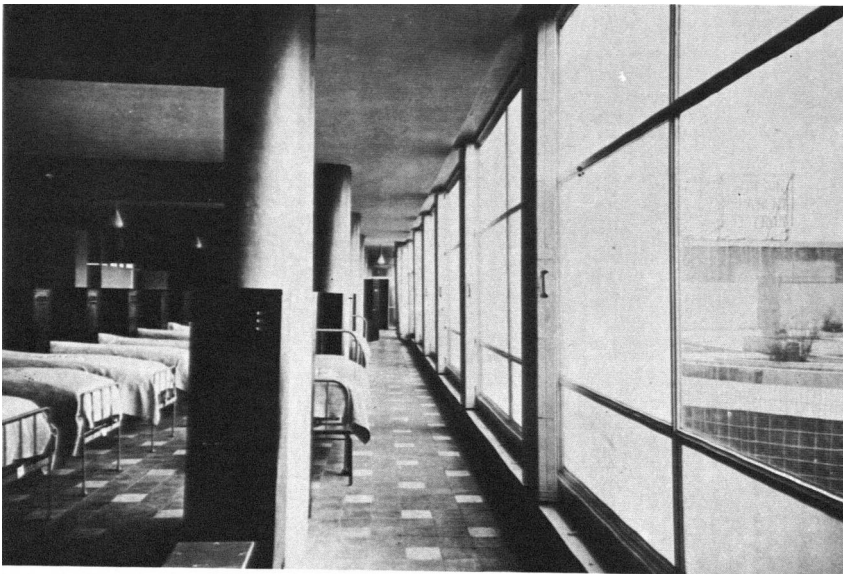
The Cité de Refuge was designed by Le Corbusier with his cousin, Pierre Jeanneret, who were specifically chosen by the philanthropist, the Princesse de Polignac, who paid for the work. Le Corbusier and Jeanneret were given almost a free hand, which enabled them to come up with a radical design, but also one that would eventually be found to be ahead of its time.

The central feature of the design was the south facing sheer glass wall. The design was based around an ambitious and revolutionary system of glazing and a type of air conditioning that unfortunately never worked. This glass wall had to be replaced in 1952 after a series of summers in which the residents had been almost baked in their rooms! A series of polychromic sun-screens (brises soleil) were added at this point.

The idea behind this building, and one that still applies today, was not simply to house the homeless, but also to transform these outcasts into useful members of society. Despite his rather pious protestant upbringing, Le Corbusier was not a religious man, but he did share some of the principles of the Salvation Army movement, and clearly believed in this project. He created not only dormitories but also classrooms and relaxation zones, most of which are still operational. However, if it is seen as an important building today, it is more because of the role it played as an experiment for Le Corbusier's subsequent constructions.

Assignment:

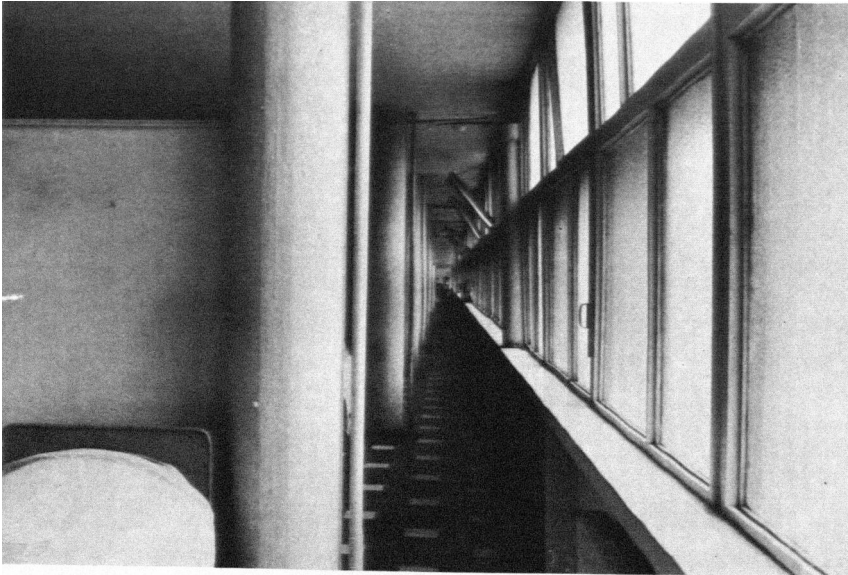
1. Why did Le Corbusier have to modify the southern facade of the dormitory?
2. Describe the Winter Case in the original state, it's passive (building envelope and structure) and active (building services supply) means:



164. A women's dormitory in its original state.

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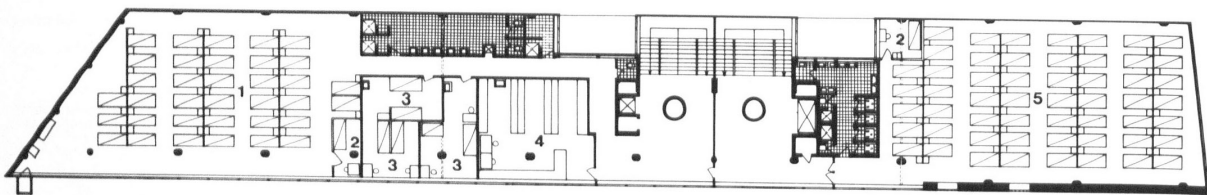
3. Describe the summer case in the original state: it's passive and active means:
4. What did he change in the facade and why?
5. Describe the winter case after the changed facade, it's passive and active means:
6. Describe the summer case after the changed facade, it's passive and active means:



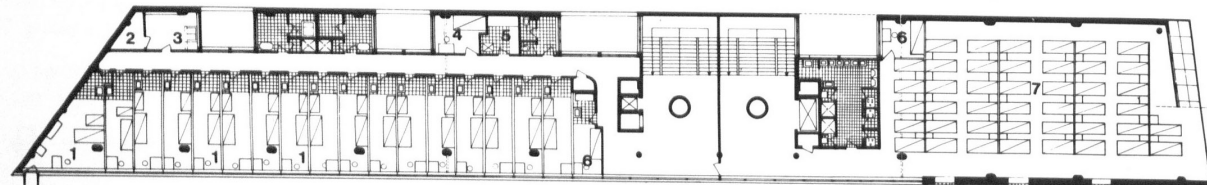
65. A women's dormitory in 1976. (B. Taylor)

(2)

7. What could we do today to optimize the energy-efficiency without changing the architectural form?



133. Second floor plan: 1. women's dormitory; 2. superintendent; 3. roomettes with two beds; 4. laundry; 5. men's dormitory.



134. Third and fourth floor plans: 1. roomettes for mothers with a child; 2. drying rooms; 3. laundry; 4. private room; 5. room for preparation of babies' bottles; 6. superintendent; 7. men's dormitories.

(2)

8. What kind of innovative products and technologies for startup entrepreneurship would you propose?

Sources:

- (1) Le Corbusier, *l' Oeuvre complèt 1929-1934*, Zurich 1964
- (2) Taylor, B. B. , *Le Corbusier, the City of Refuge, Chicago 1980*
- (3) Steffan, C., *Milestones of Energy-efficient Architecture*, Berlin 2007